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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,332	06/26/2003	Michael H. Gurin		2859

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Michael Gurin
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4132 Cove Lane
Glenview, IL 60025

EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
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1751

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/603,332

Applicant(s)

GURIN, MICHAEL H.

Examiner

Kallambella Vijayakumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/11/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-33, 35-37, 40-43 and 45-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-33, 35-37, 40-43 and 45-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/11/2006 has been entered.
- Claims 31-33, 35-37, 40-43, 45-47 and 49-50 were amended. Claims 31-33, 35-37, 40-43 and 45-53 are currently pending with the application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 51-53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "high energy efficiency products" in claims 51-53 is a relative term which renders the claim indefinite. The term "high energy efficiency products" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The applicants are suggested to delete the phrase "high energy efficiency" to overcome this rejection.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 31-33, 35-37, 40-41 and 47-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Raj et al (US 4,604,229).

Raj et al teach the composition of a ferrofluid comprising ferromagnetic metal particles of Fe, Ni or Co with a particle size of 2-30 nm, carbon black or diamond particles with a particle size of 2-50 nm dispersed in a liquid carrier of water or polyalphaolefin or polyphenylene ether (Abstract, Cl-1, Ln 57-63; Cl-2, Ln 30-40; Cl-3, Ln 9 to Cl-4, Ln 43). The prior art teaches adding about 0.5 to 1 part of anionic or cationic or nonionic surfactant to 20-1 parts by weight of ferromagnetic particles to the composition, whereby formation of at least a monolayer of surfactant such as oleic acid over the ferromagnetic metal core particles by the adsorption of surfactant will be anticipated.

With regard to the product by process limitations in the claims 31, 33, 35 and 40-41, the instant claims are drawn to a metal powder produced by a specific process, wherein the components recited in the process steps are not essential components of the claimed metal powder, and the examiner asserts that the prior art composition will be either same or substantially same as that produced by the instant claimed method steps. When the reference teaches a product that appears to be the same as the product set forth in a product-by-process

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claim although produced by a different process, the claim is not patentable. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) And *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP §2113. All the limitations of the instant claims are met.

The reference is anticipatory.

2. Claims 31-33, 35-36, 41-43 and 46-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Tecle (US 5,922,403).

Tecle teaches the composition of encapsulated ultrafine particles of metals such as Al, Be, Mg, Co, Ni, Cu, Pd, Ag, Pt, Au, Sn, Pb and mixtures thereof with a particle size of 20-70 nm. The encapsulants included oleic acid, triazoles, imidazoles, triethanolamine, 1-chlorobenzotriazole and mercaptobenzimidazole (Abstract; Cl-2, Ln 54-59; Cl-3, Ln 26-29; Cl-5, Ln 29 to Cl-6, Ln 43; Cl-7, Ln 17-30; Cl-10, Ln 10-24). The prior art composition is either same or substantially same as that claimed by the applicants, whereby formation of at least a monolayer of encapsulant over the metal particles by adsorption of encapsulant over metallic cores will be anticipated per the claims 32, 47 and 49 (Cl-5, Ln 1-15). With regard to claims 48-49, the prior art teaches metal particle suspensions in a solvent and an ink.

With regard to the product by process limitations in the claims 31, 33, 35 and 41 and, the instant claims are drawn to a metal powder produced by a specific process, wherein the components recited in the process steps are not essential components of the coated metal powder, the examiner asserts that the prior art composition will be substantially same as that produced by the instant claimed method steps. When the reference teaches a product that appears to be the same as the product set forth in a product-by-process claim although produced by a different process, the claim is not patentable. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) And *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP §2113. All the limitations of the instant claims are met.

The reference is anticipatory.

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3. Claims 31-33, 35-36, 42, 45 and 47 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishimura et al (US 6,582,763).

Nishimura et al teach a composition comprising Al core particles with a particle size of 0.01-1 micron coated with 1-10 nm of oxide shell such as cerium oxide <inorganic corrosion inhibitor> (Abstract; Cl-3, Ln 6-22). The thickness of the coating meets the limitation of at least a monolayer coverage in the claims 32 and 47.

With regard to the product by process limitations in the claims 31, 33 and 35, the instant claims are drawn to a metal powder produced by a specific process, wherein the components recited in the process steps are not essential components of the metal powder, the examiner asserts that the prior art composition will be substantially same as that produced by the instant claimed method steps. When the reference teaches a product that appears to be the same as the product set forth in a product-by-process claim although produced by a different process, the claim is not patentable. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) And *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP §2113. All the limitations of the instant claims are met.

The reference is anticipatory.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 31-33, 35-37, 40-41 and 47-53 are rejected under 35 U.S.C. 103(a) as obvious over Raj et al (US 4,604,229).

Raj et al teach the composition of a ferrofluid comprising ferromagnetic metal particles of Fe, Ni or Co with a particle size of 2-30 nm, carbon black or diamond particles with a particle size of 2-50 nm dispersed in a liquid carrier of water or polyalphaolefin or polyphenylene ether (Abstract, CI-1, Ln 57-63; CI-2, Ln 30-40; CI-3, Ln 9 to CI-4, Ln 43). The prior art teaches adding about 0.5 to 1 part of anionic or cationic or nonionic surfactant to 20-1 parts by weight of ferromagnetic particles to the composition.

The prior art is silent about the coating of the metal particle surface by the surfactant layer.

However, the prior art teaches varying the amount of surfactant in the ferrofluid composition, and it would have been obvious to a person of ordinary skill in the art to optimize the amount of surfactant in the composition as a choice of design of ferrofluid functionality with reasonable expectation of success, and, the formation of at least a monolayer of surfactant such as oleic acid over the ferromagnetic metal core particles by the adsorption of surfactant would be obvious.

With regard to the product by process limitations in the claims 31, 33, 35 and 40-41, the instant claims are drawn to a metal powder produced by a specific process, wherein the components recited in the process steps are not essential components of the coated metal powder, and the examiner asserts that the prior art composition will be either same or substantially same as that produced by the instant claimed method steps. When the reference teaches a product that appears to be the same as the product set forth in a product-by-process claim although produced by a different process, the claim is not patentable. See *In re Marosi*, 710 F.2d 799, 218 USPQ 289 (Fed. Cir. 1983) And *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). See also MPEP §2113.

With regard to claims 51-53, the prior art teaches the composition of ferrofluid and its use in heat transfer fluid and a ferrofluid seal for a computer disk drive (CI-1, Ln 57-62; CI-5, Ln 55-60),

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and it would have been obvious to a person of ordinary skilled in the art to employ the prior art ferrofluid in heat transfer apparatus including those claimed by the applicants with reasonable expectation of success.

2. Claims 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raj et al (US 4,604,229) in view of Lipsinski (US 4,246,030).

The disclosure on the composition of ferrofluid by Raj et al as set forth in rejection-1 under 35 USC 103(a) is herein incorporated.

The prior art fails to teach the addition of specific azole corrosion inhibitors in the composition. However, it teaches the addition of corrosion inhibitors in the ferrofluid composition.

In the analogous art, Lipsinski teaches the addition of triazole corrosion inhibitors to the metals in aqueous media (Cl-8, Ln 15-20, 35-51).

It would be obvious to a person of ordinary skilled in the art to add triazole corrosion inhibitors such as benzotriazole to the ferrofluid composition of Raj et al with reasonable expectation of success because the prior art is suggestive of such an addition and the use of benzotriazole as corrosion inhibitor to metal was well known at the time of disclosure of the invention by the applicants (See Lipsinski).

4. Claim 49 is rejected under 35 U.S.C. 103(a) as being anticipated by Ogawa et al (JP 58-103565, PTO-892).

Ogawa et al teaches a conductive path coating formed by surface coating Ag-Be-Cu Alloy powder by dipping the powder in an organic solvent solution of 1,2,3-benzotriazole <corrosion inhibitor>, separating the solvent and drying forming a thin film of chelate compound over the surface <at least a monolayer>. The particle size of the Ag-alloy powder was 0.05-10 microns. The surface coated Ag-alloy powder, a thermosetting resin such as xylene resin <polymer> and solvent such as ethyl carbitol <fluid/solvent> were kneaded to form paint, the paint applied to a phenolic resin substrate and cured in air forming an electrode and conductive path (Abstract).

The prior art fails to teach the instant claimed range of the metal particle size.

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However, the prior art lower limit of 0.05 micron particle size overlaps at the high end of the particle size range claimed in the instant claim. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

5. Claim 50 is rejected under 35 U.S.C. 103(a) as obvious over Tecle (US 5,922,403).

Tecle teaches the composition of encapsulated ultrafine particles of metals such as Al, Be, Mg, Co, Ni, Cu, Pd, Ag, Pt, Au, Sn, Pb and mixtures thereof with a particle size of 20-70 nm. The encapsulants included oleic acid, triazoles, imidazoles, triethanolamine, 1-chlorobenzotriazole and mercaptobenzimidazole (Abstract; Cl-2, Ln 54-59; Cl-3, Ln 26-29; Cl-5, Ln 29 to Cl-6, Ln 43; Cl-7, Ln 17-30; Cl-10, Ln 10-24). The prior art composition is either same or substantially same as that claimed by the applicants, whereby formation of at least a monolayer of encapsulant over the metal particles by adsorption of encapsulant over metallic cores will be obvious per claim.

The prior art fails to teach the specific particle size range of the metal particles.

However, the prior art teaches a particle size of 20-70 nm, and low end of the prior art particle size overlaps at the high end of the particle size range claimed in the instant claim. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Response to Arguments

Applicants argue that Ogawa et al (JP-58-103565) can not anticipate the claim 49 because it is limited to thermoset resin or paint and ethyl carbitol with a melting temperature of -76C is beyond the temperature range to transform from solid to liquid phase is not persuasive (Response, Pg-12, Para-2), because thermoset resin meets the limitation of a polymer in claim. Further, ethyl carbitol meets the limitation of solvent and phase change material in the claim because applicants define "a phase change material to typically undergo phase change from

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solid to liquid" and no specific range of temperature for such transformation is defined (Spec. Pg-4, Ln 29-30), and further, propane and methane have been included in phase change materials (See Instant Claim-41).

For the reasons set forth above and the rejections cited above, the applicant's instant compositions fails to patentably distinguish over the art compositions.

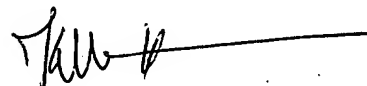
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 8.30-6.00 Mon-Thu, 8.30-5.00 Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on 571-272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KMV
February 16, 2007.



K. M. Vijayakumar
Patent Examiner